



Fort Detrick Remedial Investigation/Feasibility Study

Restoration Advisory Board Meeting
13 February 2002, 7:30 PM
Frederick, Maryland



**US Army Corps
of Engineers**
Baltimore District



**US Army Corps
of Engineers**
Baltimore District

Fort Detrick Area B-11 Removal Project Status



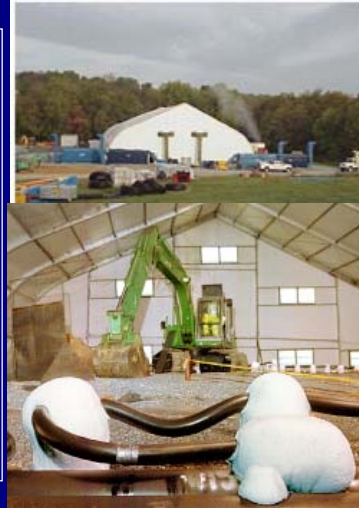


**US Army Corps
of Engineers**
Baltimore District

Fort Detrick

Area B-11 Removal Project Status

- Excavation of overburden material completed and clean soil moved to Area B Active Landfill - 12 Roll offs (174.7 tons)
- 22 Roll offs (398.5 tons) of hazardous material transported to Texas for incineration and 7 Roll offs (126.8 tons) waiting for transportation
- 4 Roll offs (53 tons) held after biological materials were found in this section of the pit.
- No lost time accidents or injuries (354 Days)
- Contaminant concentrations in the air within the containment structure were very low
- Air treatment system has operated as designed – no contaminants have been measured at system discharge



**US Army Corps
of Engineers**
Baltimore District

Fort Detrick

Area B-11 Removal Project Status (Continued)

- Excavation was discontinued after the holidays due to the finding of biological laboratory waste that consisted of:
 - 1) four preserved rat specimens,
 - 2) four vials of suspect biological material (white powder) , and
 - 3) miscellaneous laboratory materials consistent with use in a biological laboratory.





US Army Corps
of Engineers
Baltimore District

Fort Detrick

Area B-11 Removal Project Status

Evaluation of Bio Waste/Sampling Results

- All biological waste has been evaluated for Biological Warfare Programs organisms.
- Four Rats Specimens were preserved in a formaldehyde preservative.
- Four vials of suspected biological material have been evaluated by USAMRIID, ECBC, and Sentinel Inc.
 - One vial was cracked when found and determined to contain common soil bacteria;
 - One vial was found to positively contain *Streptovorticillium Reticulum*;
 - The other two vials have not been fully identified. We are still in the process of getting final identification, if possible;
 - Results show that the materials are not organisms used in past Biological Warfare Programs;
 - **These materials are not known to cause disease in humans, animals, plants or the environment.**



US Army Corps
of Engineers
Baltimore District

Fort Detrick

Area B-11 Removal

Sample Analysis Process

- **Vial Materials Sampling Process:**
 - First materials were analyzed using a culturing screen for 1-3 days;
 - Second the materials are inspected with a microscope and a gram stain analysis. **This process identifies the worst case scenario of Biological Warfare Organisms.**
 - If we cannot identify the materials we will then analyze it using a fatty acid methyl ester (FAME) system by MIDI and takes about 3 days;
 - Next these results are then compared to the database and identification methodology using the BIOLOG System.



**US Army Corps
of Engineers**

Baltimore District

Fort Detrick

Area B-11 Removal Project Status

List of Potential Biological Materials

- **Bacterial Materials:**

- Acinetobacter baumannii (formerly A. calcoaceticus)
- Actinobacillus - all species
- Actinomycetaceae - all members
- Aeromonas hydrophila
- Arachnia propionica
- Arizona hinshawii - all serotypes
- **Bacillus anthracis**
- Bacteroides - all species
- Bartonella - all species
- Bordetella - all species
- Borrelia recurrentis, vincenti
- Brucella - all species
- Campylobacter [Vibrio] foetus, jejuni
- Chlamydia psittaci, trachomatis
- Clostridium botulinum, chauvoei, haemolyticum, histolyticum, novyi, septicum, tetani
- **Corynebacterium diphtheriae**, equi, haemolyticum, pseudotuberculosis, pyogenes, renale
- Edwardsiella tarda
- Erysipelothrix insidiosa
- **Escherichia coli** - all enteropathogenic serotypes

- **Bacterial Materials (Continued):**
Francisella (Pasteurella) tularensis

- Haemophilus ducreyi, influenzae
- Klebsiella - all species and all serotypes
- Legionella - all species and all Legionella-like organisms
- Leptospira interrogans - all serotypes
- Listeria - all species
- Mimae polymorpha
- Moraxella - all species
- Mycobacterium - all species
- Mycoplasma - all species
- Neisseria gonorrhoea, meningitidis
- Nocardia asteroides
- Pasteurella - all species
- Plesiomonas shigelloides
- Proteus - all species
- Pseudomonas mallei, pseudomallei
- **Salmonella** - all species and all serotypes
- Shigella - all species and all serotypes
- Sphaerophorus necrophorus
- **Staphylococcus aureus**
- Streptobacillus moniliformis
- Streptococcus pneumoniae, pyogenes
- Treponema carereum, pallidum, pertenue



**US Army Corps
of Engineers**

Baltimore District

Fort Detrick

Area B-11 Removal Project Status

List of Potential Biological Materials (Cont.)

- **Bacterial Materials (Continued):**

- Vibrio cholerae, parahaemolyticus
- Yersinia (Pasteurella) pestis, enterocolitica.

- **Fungal Materials**

- Blastomyces dermatitidis
- Coccidioides immitis
- Cryptococcus neoformans
- Histoplasma capsulatum
- Paracoccidioides brasiliensis

- **Viral and Rickettsial Materials**

- Adenoviruses - all types
- Arboviruses - all types
- Coxiella burnetii
- Coxsackie A and B viruses - all types
- Creutzfeldt - Jacob agent
- Cytomegaloviruses
- Dengue viruses - all types
- Ebola viruses
- Echoviruses - all types
- Encephalomyocarditis virus

- **Viral and Rickettsial Materials (Continued):**

- **Hemorrhagic fever** agents including, but not limited to, Crimean hemorrhagic fever (Congo), Junin, Machupo, and Korean hemorrhagic fever viruses
- Hepatitis associated materials
- **Hepatitis A, B, C, D, E viruses**
- **Herpesvirus** - all members
- **Infectious bronchitis-like virus**
- **Influenza viruses** - all types
- Kuru agent
- Lassa virus
- Lymphocytic choriomeningitis virus
- Marburg virus
- **Measles virus**
- **Mumps virus**
- Parainfluenza viruses - all types
- **Polioviruses** - all types
- **Poxviruses** - all members
- **Rabies virus** - all strains
- Reoviruses - all types



US Army Corps
of Engineers
Baltimore District

Fort Detrick

Area B-11 Removal Project Status List of Potential Biological Materials (Cont.)

- Respiratory syncytial virus
- Rhinoviruses - all types
- Rickettsia - all species
- Rochalimaea quintana
- Rotaviruses - all types
- Rubella virus
- Simian virus 40
- Tick-borne encephalitis virus complex,
including Russian spring-summer
encephalitis,
Kyasanur forest disease, Omsk
hemorrhagic fever, and Central European
encephalitis viruses.
- Vaccinia virus
- Varicella virus
- Variola major and Variola minor viruses
- Vesicular stomatis virus - all types
- Yellow fever virus



US Army Corps
of Engineers
Baltimore District

Fort Detrick

Area B-11 Removal Project Status Proposed Actions

- Biological materials will be segregated if it is distinguishable and disposed of separately
- Soil and waste shredded will be treated to disinfect before transport to incinerator (equipment is being retooled for disinfection operation).
- Air treatment system will be reassessed and upgraded as needed to assure exhaust from the structure is safe.





**US Army Corps
of Engineers**
Baltimore District

Fort Detrick

Area B-11 Removal Project Status

Proposed Actions - UVGI



Typical UVGI Module

- Each of the four UVGI systems will consist of three 12-foot long, 40-inch diameter disinfection modules (DMs) that will be custom designed and manufactured by MRAD, Inc. Each module is capable of treating 10,000 CFM of air. These units enclose 24 UVC lamps. Each lamp will be shrouded in a quartz sleeve in order to eliminate efficiency loss in cold temperatures.
- <http://www.airdisinfect.com/>
- MRAD Modular Return Air Disinfection technologies are the only method of Sporocidal Air Disinfection. Our modular scaleable designs are capable of solving the most difficult of airborne pathogen control problems in hospital isolation wards, AIDS clinics, or research laboratories;
- MRAD Air Disinfection Modules kill all pathogenic forms of bacteria and viruses, regardless of size or type, including mold spores and the sub-micron cold, flu, and tropical fever pathogens that are small enough to pass through HEPA filters.



**US Army Corps
of Engineers**
Baltimore District

Fort Detrick

Area B-11 Removal Project Status

Proposed Actions





**US Army Corps
of Engineers**
Baltimore District

Ft Detrick, Area B, Pit B-11 Removal Action (Additional Costs Over and Above Current Contract Requirements):					
					12-Sep-02
Current Cost per Week			91000	25	\$ 2,275,000
Additional Manpower Time	32	5	25	40	\$ 160,000
O&M of Systems					\$ 140,000
Soil Milling Machine Rental to Crush Vials, etc.					\$ 25,000
Disinfectant and Spray Equipment to Treat Soil Biohazards					\$ 70,000
HEPA Filters and Fit Up					\$ 70,000
New Ultra Violet Gericidal Irradiations System					\$ 140,000
Subtotal					\$ 2,880,000
Corps 8% S&A					\$ 230,400
New Contract Cost Plus Corps 8% S&A Subtotal					\$ 3,110,400
10% Contract Contingency					\$ 270,000
Additional 8% S&A for 10% Contingency					\$ 21,600
New Contract Cost + Contingency + Corps 8% S&A					\$ 3,402,000
Other Costs:					
Government Bio Testing (USAMRIID and ECBC)					\$ 200,000
Government Cylinder Sampling and Disposal					\$ 20,000
Corps Planning and Design for Changes in Scope of work.					\$ 20,000
Total Project Overage after Contacting Live Bio Materials					\$ 3,642,000